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Sea Turtles and Lights

Florida's endangered sea turtles need your help

Each summer, Florida beaches host the largest gathering of nesting sea turtles in the United States. Female sea turtles emerge from the surf to deposit eggs in sand nests and later, tiny hatchlings struggle from their nests and scramble to the ocean. Nearly all of this activity takes place under cover of darkness and relies upon a natural light environment too often disrupted by the addition of artificial lighting.

With this pamphlet, Florida Power & Light Company and the Florida Fish & Wildlife Conservation Commission would like to inform beach residents and visitors to the adverse effects of beach lighting on sea turtles and offer solutions that will aid in conserving sea turtles that nest on developed beaches.

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The Nocturnal trek of hatchling sea turtles

Fifty to sixty-five days after eggs were placed in the nest, hatchling sea turtles tear themselves free of their papery eggshells beneath the sand and with periodic bouts of thrashing, make their way to the surface. At nightfall, as many as 100 hatchlings burst together from the sand and immediately scramble toward the ocean. Moving quickly from the nest to sea is critical for the survival of hatchling sea turtles.

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The problem with lights

On beaches where artificial lighting is visible, the hatchlings' important journey to the sea is disrupted. Hatchling sea turtles emerging from nests at night are strongly attracted to light sources along the beach. Consequently, hatchlings move toward streetlights, porchlights or interior lighting visible through windows, and away from the relative sanctuary of the ocean. Hatchlings so misled fail to find their way to the sea, having succumbed to attacks by predators, exhaustion, drying in the morning sun, or strikes by automobiles on nearby parking lots and roads. Quite literally, a single light left on near a sea turtle nesting beach can misdirect and kill hundreds of hatchlings. Cases where hatchlings have been lead to their death into the flames of unattended fires are testimony to the strong attraction hatchlings have for light.

Artificial lighting also affects the nesting of female sea turtles. Studies have shown that brightly lighted beaches are less frequently used as nesting sites. In addition, females attempting to return to the sea after nesting, like hatchlings, also can be lead astray by nearby lighting.

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Solutions - you can help

Solving the problems created by artificial lighting on sea turtle nesting beaches requires the understanding of citizens within coastal communities. Reducing the effects of beach lighting requires little inconvenience or compromise of human safety.

Simply put, the most direct and complete way to resolve problems for sea turtles caused by artificial beachfront lighting is to eliminate all artificial sources that emit light visible from the nesting beach. Light visible from the beach may include light emitted directly from sources, light reflected by buildings and other objects, light from interior sources shining through windows, and light scattered by sea mist.

Unfortunately, eliminating all beachfront lighting is not always practical. Human safety concerns and the

magnitude of some lighting problems require some compromise. The following are a few techniques designed to reduce the effects of artificial lighting on sea turtles.

1. Keep beachfront lighting turned off during the nesting and hatching season. This season extends from March 1 - October 31 in Brevard, Indian River St. Lucie, Martin, Palm Beach and Broward counties and from May 1 - October 31 in all other coastal counties. Ideally, lighting should remain off throughout the night during this period. Light sources remaining on until 11 PM will still affect about one third of the hatchlings emerging from nests on a given night.
2. Reduce the number of lights near nesting beaches to the minimum necessary to accomplish the lighting goal. Lighting used for purely decorative purposes should be kept off.
3. Reduce light reaching the nesting beach by lowering, shielding, recessing and/or redirecting light sources. Any light source visible to an observer on the beach is likely to affect sea turtles. Light sources that are indirectly visible from the beach, also cause problems for sea turtles. For this reason, low-mounted down lights are preferred over lighting that shines upward.
4. Place security lighting on motion-sensitive switches that keep lighting off when it is not needed. Lights that come on only when approached can be quite effective for security purposes.
5. Apply dark window tinting to windows visible from the beach and draw curtains after dark.
6. A great many lighting applications are known to affect sea turtles. These include porch, pool, street, stairway, walkway, parking lot, security, and interior lighting, floodlights, up-lights, spotlights, area lighting, lighted commercial signs, flashlights, kerosene lanterns, open fires, car headlights and even "bug-zappers" (which emit light that both insects and sea turtles see as well).

The best way for a beachfront resident or visitor to determine whether their lighting could adversely affect sea turtles is the adjacent beach at night, a few hundred feet either way, and look for light. Light visible either directly or indirectly from any portion of the beach should be reduced by employing the methods above.

In addition to the actions above, replace existing light fixtures with those that emit light less detrimental to sea turtles. Studies have shown that light in certain wavelengths does not affect hatchling and nesting sea turtles as much as others. For instance, a pure yellow light such as that from a low pressure sodium vapor source does not appear as attractive to turtles as some other lights. Yellow incandescent light bulbs also are preferred if they are kept at low wattage. A recent collaborative effort between FPL, the FWC and other regulatory agencies and local governments resulted in development of several promising new technologies to address disorienting street lights. Testing of the new colored and stained lenses was completed in 1998. Examples of lighting in appropriate near sea turtle nesting beaches include fluorescent, mercury vapor, high pressure sodium vapor, metal halide, and white incandescent lighting.

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How can you help

People wishing to help Florida's sea turtles can make contributions to th Marine Turtle Protection Trust Fund, Office Protected Species Management, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399. A beautiful color sticker or poster depicting either a hawksbill or logger-head turtle is available for each donation of five dollars or more.

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Some common questions about sea turtles and lighting

When do hatchling sea turtles emerge from nests?

Hatchlings emerge from nests throughout the months of June, July, August, September, and October. The date of nest emergence depends on the date the eggs were laid and the incubation period of the nest (typically 50-65 days). It is a myth that hatchlings emerge only around the time of the full moon. Hatchlings ready to emerge wait just beneath the sand surface until conditions become cool. This temperature cue prompts hatchlings to emerge primarily at night, although some late-afternoon and early-morning emergences are known.

How do hatchling sea turtles know the direction of the ocean when they emerge from their nests?

Hatchlings possess an inborn tendency to move in the brightest direction. On a natural beach, this brightest direction is most often the open view of the night sky over, and reflected by, the ocean. Hatchlings also tend to move away from darkly silhouetted objects associated with the dune profile and vegetation. Hatchlings emerge and locate the sea at all phases and positions of the moon; it is a myth that hatchlings depend on the moon to lead them seaward.

Why do artificial light sources attract hatchling sea turtles?

Hatchlings that crawl toward artificial light sources follow the same instinctive response that leads them seaward on naturally lighted beaches. It is the glaring light of artificial sources that leads hatchlings astray. At night, artificial light sources appear bright and glaring because they are close by, producing light that appears intense but is not bright enough to illuminate the ocean. As a result, light from an artificial source appears many times brighter than light from any other direction including the ocean. Natural light sources like the sun and moon are extremely bright, but are also quite distant. Their light brightens the sky, ocean, and dune, allowing hatchlings to correctly assess the visual cues that lead them to the sea.

There are other lights near my beachfront property that are visible from the beach. How can lights on my property contribute to the problem?
Any reduction in the amount of artificial light reaching the nesting beach helps sea turtles. As lighting is reduced, hatchlings emerging on moonlit nights and at locations far from the lighted property will have a better chance at entering the sea.

What should be done with misdirected hatchlings found on the beach?

Hatchling sea turtles found wandering away from the ocean should be taken to a darkened portion of beach and allowed to walk into the surf on their own. Hatchlings that do not crawl vigorously can be placed in the ocean and allowed to swim away. In all cases, the Florida Fish & Wildlife Conservation Commission (east coast office 561-575-5455; west coast office 727-896-8626) or the Florida Marine Patrol (1-800-Dial-FMP) should be notified during regular business hours.

Whom should I notify about a light that is visible from a sea turtle nesting beach?

Many coastal communities in Florida have ordinances that restrict or prohibit beachfront lighting during the nesting season. Check with your county or city to see if they have adopted a sea turtle lighting ordinance. Lighting problems should then be reported to the local code enforcement board or police.

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Commitment to the environment

It is company's intent to continue to conduct business in an environmentally responsible manner. Accordingly, Florida Power & Light will:

- Comply with the spirit and intent, as well as the letter of environmental laws, regulations and standards.
- Incorporate environmental protection and stewardship as an integral part of the design, construction, operation and maintenance of our facilities.
- Encourage the wise use of energy to minimize the impact on the environment.
- Communicate effectively on environmental issues.
- Conduct periodic self-evaluations and report performance.

The Florida Marine Research Institute of the Department of Natural Resources conducts research necessary for marine resource management decisions. The Institute has responsibilities for marine fisheries, marine habitat research, endangered and threatened species recovery programs, and a marine fish stock enhancement research program.

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For More Information

For more information about sea turtles, contact the Florida Fish & Wildlife Conservation Commission, Division of Marine Resources, Florida Marien Research Institute, 100 Eighth Avenue, S. E., St. Petersburg Florida 33701, 727-896-8626.

A manual summarizing guidelines for minimizing the impact of readway lighting on turtles, has been developed in a collaborative effort by FPL, the FWC and other regulatory agencies. A copy of the document is posted on FWC **web site.**

The Florida Marine Research Institute of the Florida Fish & Wildlife Conservation Commission conducts research necessary for marine resource management decisions. The Institute has responsibilities for marine fisheries, marine habitat research, endangered and threatened species recovery programs, and a marine fish stock enhancement research program.

People wishing to help Florida's sea turtles can purchase a sea turtle license plate at their local tag office. Proceeds go the the Marine Turtle Protection Trust Fund and support marine turtle research and protection on Florida.

Additional contributions can be made to the Marine turtle Protection Trust Fund, Bureau of Protected Species Mangement, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399. A beautiful color sticker or poster depicting a hawksbill turtle is available for each donation of five dollars or more.

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